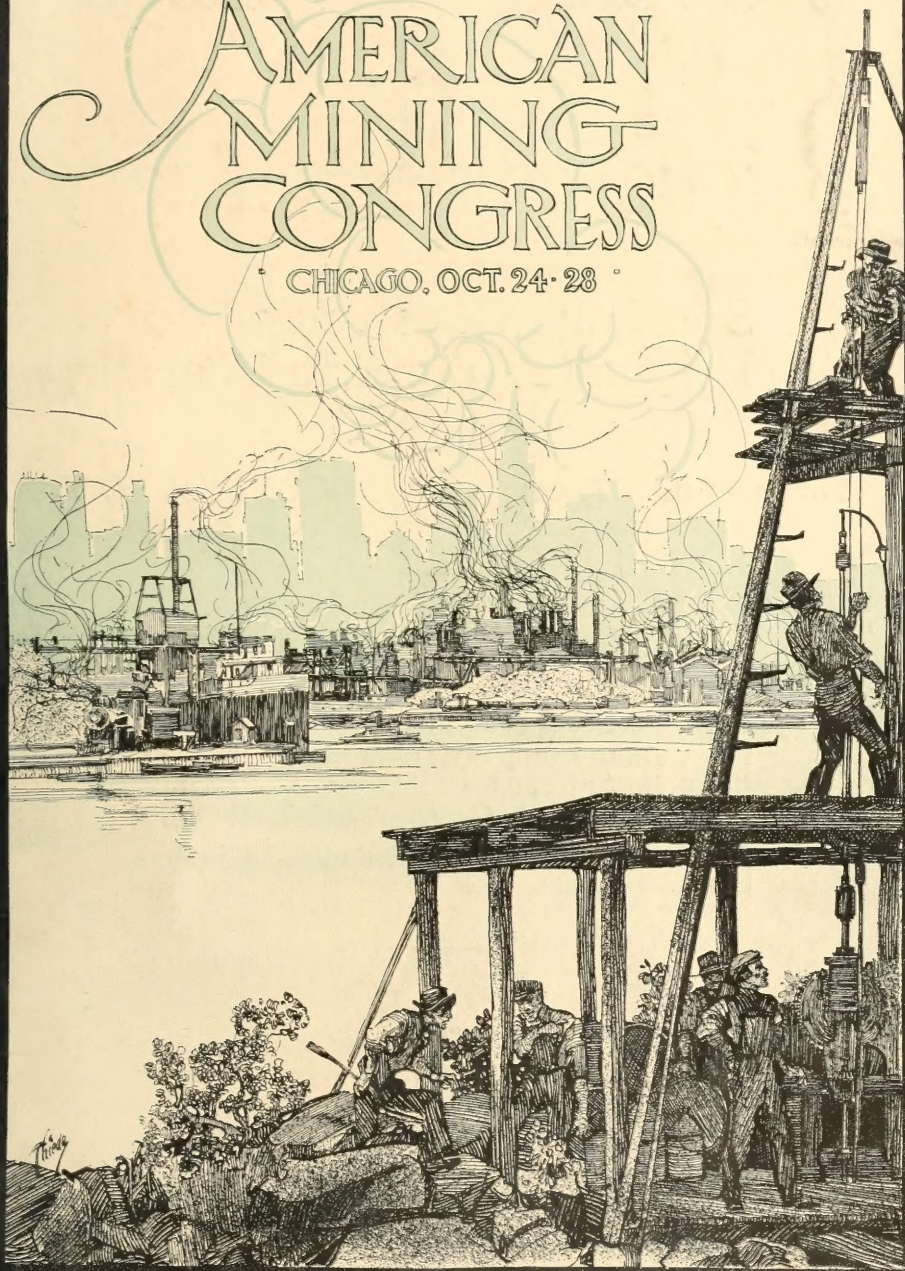


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Preliminary Publication

AMERICAN MINING CONGRESS

CHICAGO, OCT. 24-28



OCT 7 1911
UNIVERSITY OF TORONTO

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Manufacturer of

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**Specially Constructed to
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My machinery is used successfully by the Consolidated Gas Company, of New York, to briquette Coke Breeze; the Lehigh Coal & Navigation Company, of Philadelphia, to briquette Anthracite Culm, and the Phoenix Mining Company, Georges' Creek Region, Westernport, Md., to briquette Bituminous Slack.

**Lignite and Ores are Also Successfully
Briquetted with my Machinery**

**Estimates and Plans Cheerfully Furnished Upon Application
I Will Take Charge of Complete Installations**

An Invitation

*To the man who has hoped vainly to succeed
by underselling his neighbor;*

*To him who is fettered by opposing public
demand and federal statute;*

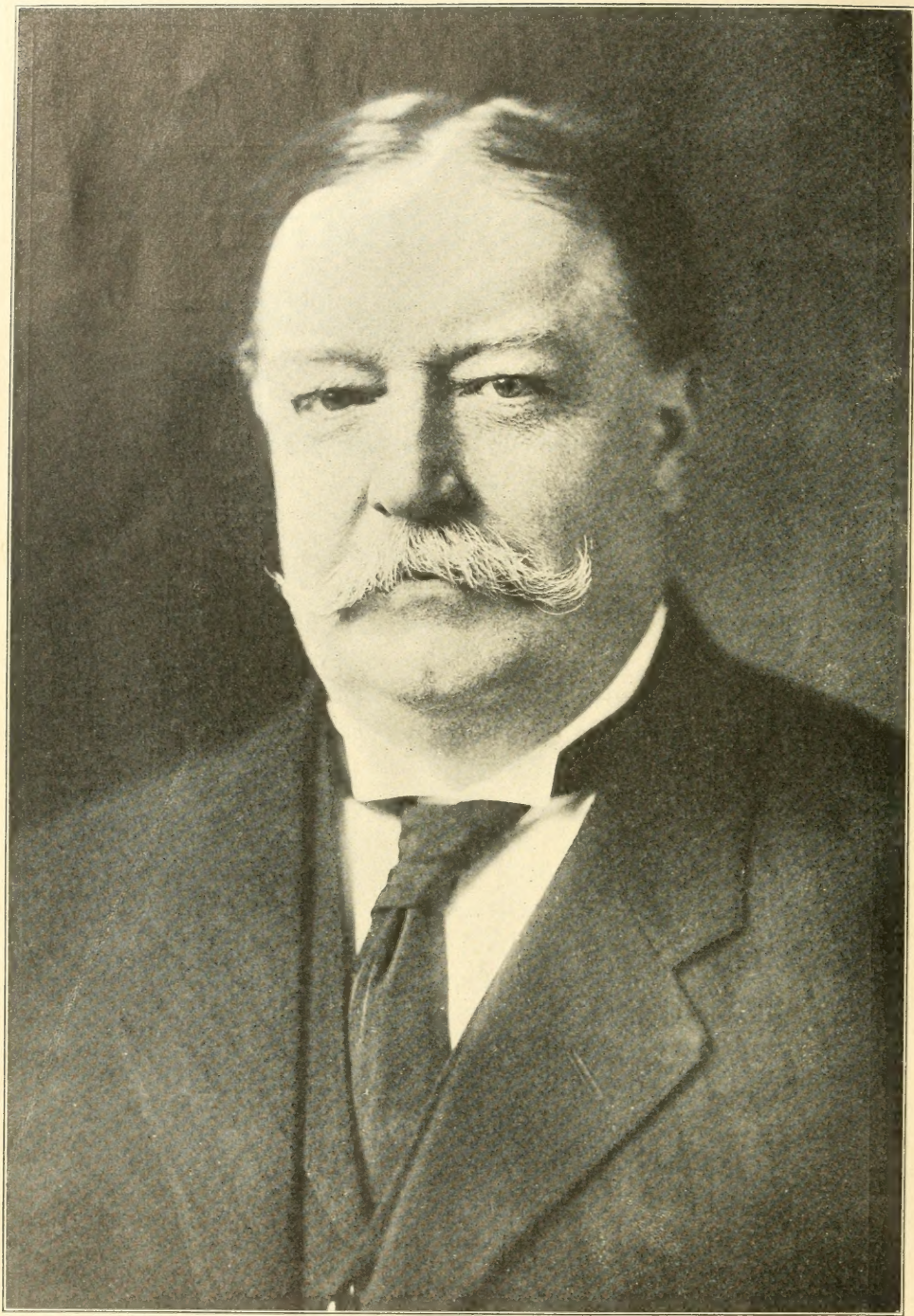
*To that one who in anguish sees his em-
ployes maimed or killed without the means—
financial or mechanical—to check the waste;*

*To that other who sees regulative measures
chosen in passion rather than in reason
foundationed on knowledge of conditions;*

*And, to all who, in a spirit of progress,
want to see the mining industry so governed, it
shall, without waste of resources or unneces-
sary danger to workers, yield a fair profit to
its investors*

*An invitation is extended to meet in Chicago
—October 24 to 28—with the President of the
United States, the Secretary of the Interior, the
Director of the Bureau of Mines, the Governors
of States, and the Principal Producers of the
Nation, to study the problems to the end that
reason and knowledge may rule in place of
prejudice, passion, and thoughtlessness in the
government of that industry, which is the foun-
dation of the nation's wealth.*

The American Mining Congress



William Howard Taft. Copyright by Moffett Studios,
Chicago.

He has definitely promised to address the convention on Saturday, October 28, at 10 a. m.

AMERICAN MINING CONGRESS

CHICAGO, OCTOBER 24-28, 1911

COAL AND METAL MINING PROBLEMS

Harrassed by Excessive Competition, with Resultant Waste and Loss of Life Among Workers, the Mining Industry Plans to Appeal to the Government for Relief—An Intermediary is Chosen to Bring the Matter Forcefully to the Attention of Legislators and Executives.

Until this year the coal and metal branches of the mining industry traveled along separate and distinct yet parallel and similar paths. For this there was merely a geographical reason. In all things except parallels of longitude—in aims, in problems, and in needs: yes, even in waste—the two were one. At bottom of each was an exhaustible natural resource.

Yet because the metal mining industry found its present occupation and the future supply of precious and semi-precious metals mainly west of the Mississippi river it proclaimed itself a western institution. As such it maintained that sectional isolation which rapid transportation and free communication everywhere are destroying.

With equal obstinacy, the coal industry has acted as though it were essentially an eastern business. Coal being a necessity must be cheap. This may mean low cost of production; it always means a low charge for transportation. Still the carrier must have his hire which requires that coal be produced near the point of consumption. Pennsylvania, Illinois, West Virginia, Ohio, Kentucky and Indiana produce more than three quarters of the nation's output of 500,000,000 tons of coal. They consume more than half of it. Being the center of both population and productive enterprise, holding such a predominant position in coal and being, relatively at least, eastern states, it has

been said by natural deduction that coal is an eastern enterprise.

What was overlooked was that, in the factory, coal and iron ore, coal and copper, coal and lead, and coal and zinc meet as complementary factors. This great truth has been disregarded and geography alone has been permitted to decide that the coal operators and the metal mining men should travel their separate and lonely ways.

Now all that has been changed. Through an appreciation of common necessities, these natural but hitherto isolated allies are awakening to the importance of acting together. The cementing influence is the Government Bureau of Mines which operates under the Department of the Interior. By working for the welfare of both yet depending upon the support of both, it has proved that they belong together. How these two branches of one industry came to work together for the creation of the Bureau of Mines and now co-operate for the extension of its work is a story which proves the singleness of the mining problem.

In the west the metal mining men find themselves facing these questions which must be answered: Mineral resources must be conserved through more economical methods of ore reduction; some satisfactory disposition—satisfactory to a numerous interest—must be made of the minerals underlying the public domain; who shall con-

trol the water on the forest reserves must be decided finally and that soon; and, some decision must be reached as to what use if any is to be made in mining of the timber on the public domain.

Appeal to Government.

Seeing how intimately the problems of the Government are interwoven with those of the metal mining industry it is only natural that the metal mining people should at least wish to advise with the Government upon these matters. It was a desire that the ultimate decision should not be reached on partial knowledge or prejudice which led the metal mining men to appeal to the Government for the formation of the Bureau of Mines. It was, in large measure, the power of their virile organization—the American Mining Congress—which caused the Bureau of Mines to come into existence.

At the same time, the peculiarly unfortunate misunderstanding between the coal producer and the public was forever urging not only the advisability of but the necessity for an intermediary in the form of a Government bureau. Without that harmonizing influence it was likely that natural but misguided antagonism would bring results disastrous to both parties.

Careful students of coal production began to realize that the public was awakening to the many grave problems in coal production. There were the questions of a vast waste through coal left unmined and of making human life more safe. To solve these two all-embracing difficulties required a change of conditions inside the mines; a study of those mysterious causes which lead to explosions; and, it might be, a study to simplify that new, mysterious and powerful factor "electricity in mines."

The Puzzling Conflict.

On the one side were these problems which somehow must be solved. On the other side, they were confronted by a federal statute which prohibits them

from agreeing upon anything and even forbids any meeting of coal trade minds upon any plan whatever, that in any way restrains trade, no matter what its purpose. Annoyed by this controversy between popular demand and a statute, but under necessity to obey both, it was most natural that the coal industry should appeal to the Government for relief. This led coal producers to appeal to the Government for the creation of the Bureau of Mines. They hoped that, through it, the public would come ultimately to understand.

Coal Under Public Land.

Latterly there has entered also the annoying question: What disposition should be made of the coal underlying the public domain? For some years this matter has been a factor in Oklahoma. With the expansions of railroads into the west and with the concomitant upgrowth of industry, there has come a greater need for the development of some of the coal which underlies the western public domain. Also, because the Pacific coast has no coal and needs it sorely, interest grew rapidly in the coal reserves of Alaska and their development.

Urged by all these perplexities, it became a matter of immediate necessity that the coal producers and the Government should come to some understanding. With the establishment of the Bureau of Mines the natural intermediary was created. It has been and is hoped that through this instrumentality conflicts such as have been described could and may be softened to the point where opposing factions will be harmonized.

With the metal mining men of the west and with the coal producers of the east finding a probable solution of their difficulties in the same Government bureau, it was only natural that the two should seek to develop some form of united support for the Bureau of Mines. This could find adequate expression only in some organization where any and all problems could be

studied with the wisdom which comes from more complete representation. That raised the main question which was bothersome: Where was there an organization so powerful it could be made the common expression of the desires of both interests.

Selecting An Aid.

In the creation of the Bureau of Mines the one most powerful individual factor was the American Mining Congress. It is an organization which through long and tedious development has expanded until it expresses the intimate desires of the metal mining men. On the other hand, the coal producers of the nation have had and now have no one organization expressive of their consensus of opinion. Those who had given the subject most consideration finally decided to seize upon the one organization already created and by further expansion and development make it expressive of the mining industry as a whole. This decision to unite upon the American Mining Congress was arrived at late in 1910 and the details were worked out early in 1911. At that time the American Mining Congress was seriously considering holding its annual meeting at Douglas, Arizona, which is reasonably central to the metal mining industry. It was realized that to ask the coal mining men of the east to go that far west for the purpose of discussing their problems was, until they were reasonably convinced that results would follow, out of the question.

As a consequence, it was decided to invite the American Mining Congress to hold its meeting farther east, preferably in Chicago. To bring this about some energetic individuals set to work. Late in January, after many disappointments, and after overcoming many discouraging circumstances, a committee of Chicago citizens invited the American Mining Congress to hold its session in Chicago and the board of

directors gave consent. This is how the first attempt came to be made to bring into one comprehensive organization the coal operators and the metal mining men.

It is to spread information concerning this meeting and what is to be attempted that this book is printed. The Congress convenes in Chicago on October 24 and continues in session for four days. The problems of the metal mining industry and the coal industry will be discussed in an effort to arrive at some practical and sane understanding. Because of the vastness of the subjects in hand, the holding of this one general meeting is a matter which appeals to the best minds in both branches of the one industry. Because there is need for all the light that can be thrown on the subject, it is sincerely hoped that those who read this will attend the meeting and participate in the discussion, the one purpose of which is to find the very much-needed solution of grave problems.

What Is Desired.

Concerning the purpose of the forthcoming meeting there should be no mistake. The mining interests, merely to correct a mistake in public policy, do not intend to surrender control of their business. These men realize that human affairs must be decided by human minds; to change control from one group to another does not of necessity solve the problem; it may in fact do the reverse. Thus the mining men are not asking government control, nor do they consider it seriously.

They do realize the private and public character of business undertakings such as theirs. What they want is that the government in protecting the public interest shall not neglect the private. They want the public to realize that, contrary to current belief, the business interests cannot succeed despite the obstacles thrown in their way.

PROBLEMS OF THE COAL INDUSTRY

By George Holmes Cushing

EDITOR OF THE BLACK DIAMOND.

Coal production is both a private business and a public function. As a private enterprise it is concerned with profit only. In its public relation it is concerned with the preservation of a common inheritance which may be exhausted and with the protection of endangered human life. How to take the profit without danger to property and life and how to safeguard the public interest without destroying the private is the problem of coal production.

Coal operators could not ignore profit even though so disposed. A mine may be lost through any one of a dozen causes and must be restored either out of the accumulated surplus or with borrowed funds. No profit means no surplus and no borrowing power. Thus to neglect the private side—the profit—begins the destruction of the industry itself.

Neither does any sane man consider ignoring either the complete reclamation of coal from the ground or the safety of miners. To do so would be to throw heedlessly away the tools with which the operator must work to meet his personal end—profit.

The annoyance has come through the public disregard of the private aims of a coal producing company and its insistence upon perfection in the altruistic relation,—without being willing to pay for what is done for the common good.

Thoroughly informed leaders of the coal industry have not resisted the public efforts to obtain more complete recovery of the coal and the greater safety of miners. On the contrary, they have been leaders both of thought and practice in this regard—first, because they are men and second because it pays. Any complaint which they may make or

may have made against public demands arises from this: The people have insisted upon their wishes being granted without even being sympathetic with the operators who are struggling to do what is asked no matter how impossible compliance may seem to be. The coal operator knows that the public has insisted upon lavish expenditures without any attempt to ascertain whether the industry can pay the bills. The people do not care what satisfying their wishes may cost somebody else.

The unfortunate result has been that the public has considered the coal operators inordinately greedy while the operators have retaliated by declaring the public blind and unreasonable. Out of this natural misunderstanding has grown up a wasting conflict. Groups of individuals have considered the coal trade the proper object of many predatory campaigns. States have even reflected the animus of an angered citizenship by passing regulative laws which are thoughtless or worse.

Only the Federal Government has unwillingly and imperfectly extended any sympathy to the coal operator. This weak sympathy has found expression in the Bureau of Mines which, despite its amiable intentions, has been crippled by the lack of funds with which to find the facts on both sides.

Those who understand the coal trade distress know how harmful to both parties is this disagreement between the public and its principal industry. They know that the time has come for a proper and generally clear understanding of coal problems. They know too that this understanding can only be reached by a full and free discussion and perhaps only by a public investigation.

To obtain the facts and to present them to the people or their representatives, the first requisite is an organization.

Such an organization—one capable of investigating and reporting—is found in the American Mining Congress. That Congress, heretofore committed almost solely to the metal mining

industry, has undertaken to serve also the coal trade. Its first step is to hold a meeting at which all the facts will be brought out and a possible solution suggested. This meeting will be held on October 24 to 28 inclusive, at the La Salle hotel in Chicago. Those who are most vitally interested in this matter should attend this meeting and participate in the discussion.

SOME VITAL WESTERN PROBLEMS.

By James F. Callbreath, Jr.

SECRETARY OF THE AMERICAN MINING CONGRESS.

The United States with five per cent of the world's acreage and five per cent of the world's population, is producing approximately

- 20% of the world's gold
- 80% of the world's corn
- 60% of the world's petroleum
- 70% of the world's cotton
- 40% of the world's iron
- 55% of the world's copper

and has 40 per cent of the world's mileage of the railroads.

The wealth of the United States is increasing much more rapidly than her gold production.

If gold is important as a basis of credit, or as a measure of value, then the increase of the country's wealth and the more rapidly increasing use of money in business transactions makes the gold mining a national rather than a Western problem.

In all lines of production, success or failure is predicated on the difference between the cost of production and exchange on the one hand and the market price on the other. The prevailing high level of prices, contrary to the general belief, is particularly burdensome to gold production. This may not be true as applied to the few high grade gold mines. The fame of the West has been made by her high grade mines; her great wealth is in her low grade

mines where a difference in the expense of mining, transportation or reduction of fifty cents per ton makes the difference between success or failure.

In many of the big gold producing mines, carrying ore amenable to lixiviation or cyanide treatment the gross value of the ores mined is below \$3.00 per ton. Let us suppose that ten years ago it cost \$2.00 per ton to mine and mill this ore and that 80 per cent of the value was saved in the milling process, or \$2.40 per ton; this left to the operator a profit of 40 cents per ton, which on a 500-ton mill would make a profit of \$72,000 annually. If the costs of mining and milling should be increased 25 per cent, a loss of 10 cents per ton would result from the operation, taking no account of the exhaustion of the mine, making a net operating loss of \$18,000 annually.

Not many years ago miners worked ten hours daily for \$2.50. Now three to three and one-half dollars are paid for eight hours work, an increase of 75 per cent in the cost of this, the principal item of production expense. The cost of machinery and supplies has been greatly increased, and it has only been through improved methods by which production costs have been decreased or the percentage of saving largely in-

creased that the continued mining of these ores has been made possible.

In the treatment of sulphide or refractory ores the effect has been to close many of the mines. In mechanics great improvements have been made, but in the metallurgy of refractory ores but little has been accomplished for many years. We still buy coal and coke to burn the sulphur from our ores; we still pay a penalty for excess zinc; we still lose in the reduction operation the many other metals which are found in combination with our gold and silver. These now wasted metals are of sufficient value if recovered to pay all the costs of production and treatment.

The great need of the West is a system or systems by which *more of the values of all the metals* contained in complex ores may be saved.

This would add more than \$50,000,000 annually to the country's wealth without increasing the tonnage of ore now being mined. It would, by the increased operations which would be made possible, add another \$100,000,000 annually to our productions of gold and another \$100,000,000 worth of baser metals.

The solution of this problem is the great need of the West, and in the writer's belief, a greater proportionate need to the country as a whole.

How can this need be met?

By a systematic investigation of the metallurgy of refractory ores and the devising of plans by which known metallurgical processes may be practically and economically applied to their reduction.

By whom and how can this work be done?

Not by the individual, because of the large expense necessary and not best by the individual even if possible, because if so solved the benefit should go to the investigator through the creation of a monopoly by patent or otherwise by which he might receive a proper reward for his enterprise.

The great campaign of the West for federal co-operation had for one of its special objects the solution of this question through the efforts of the Federal Bureau of Mines and the West hopes that another year Congress will in making its appropriations for the Bureau of Mines, make a specific appropriation for this work.

At this time a most vital problem to the West concerns the control and disposition of the remaining public lands, a large part of which are mineral bearing.

For many years the inadequacy of the present patchwork method of dealing with the public lands of the West has been acknowledged. These laws, first outlined in 1866, and frequently amended since that date, have been the cause of much controversy and some injustice.

The importance of this question will be shown by the fact that nearly one-half of the acreage West of the Eastern border of Colorado is still in public ownership, and this fact indicates the vast influence and effect which will result from any restrictive policy upon the further development of the West.

It is practically agreed that the present system is inadequate, but there is a wide difference of opinion between those who urge a leasing system as being necessary to prevent a monopoly of the natural resources of the West and those who regard such a system as impractical and revolutionary, and who insist that the doctrine of Abraham Lincoln that "the public lands are an impermanent national possession, held in trust for the maturing states" is still good doctrine.

The American Mining Congress, recognizing the importance of this subject, is asking through its committee on General Revision of Mineral Land Laws that the National Congress shall provide for a commission, which shall by public hearing in the Western States and Alaska, study the conditions and

(Concluded on page 30.)

RECORD OF THE BUREAU OF MINES

By John L. Cochrane

STATISTICIAN OF THE BUREAU OF MINES.

Editor's note. No man in the nation is, we believe, better qualified to tell what the Bureau of Mines has done than Mr. Cochrane. He was intimately associated with the Technologic Branch of the United States Geological Survey. He is now statistician of the Bureau of Mines.

Mr. Cochrane was schooled to observe. American journalism has no keener pair of eyes and no more honest pen. What he says of the Bureau of Mines is authoritative; it all happened precisely as he tells it. Unfortunately, Mr. Cochrane is in no position to say—as we say without his knowledge or consent—that these astounding achievements are the products, really, of that peculiar combination—genius and poverty. Dr. Holmes, the genius of the public service working with meager appropriations, has gone a long way toward revolutionizing a nation's viewpoint and practices. No public bureau on the globe has, at a similarly small expense, accomplished more than what the engineering department of the Government has done for the mineral consumers, producers and the public. If this tells anything, it says plainly: If so much has been accomplished with so little, how vastly much more could be achieved if the Bureau were given larger appropriations.

The Federal Bureau of Mines on July 1st, ended its first fiscal year. It was a year of effective organization, and big accomplishments.

The Bureau of Mines is the successor to the Technologic Branch of the United States Geological Survey. Dr. Joseph A. Holmes, director of the Bureau, was the head of this Branch. What he originated in one he is continuing and enlarging in the other. Thus the real work of the Bureau of Mines dates from 1907, the darkest year in the history of American coal mining.

The Bureau of Mines began by concentrating upon an attempt to reduce the number of deaths in mines. In the last three years, there has been a decrease of 25 per cent. In 1907, 3,125 miners lost their lives, or 4.86 in every 1,000 employed. In 1909, the number was 2,412 or 3.62 men in every 1,000 employed. The record of the three years is as follows:

Year.	Killed.	Injured.	Death rate per 1,000 employed.
1907	3,127	5,316	4.86
1908	2,451	6,772	3.60
1909	2,412	7,979	3.62

Since 1907 exceeded all other years in coal tonnage production and in men employed, it has been argued that the smaller number of deaths in ensuing years is no accurate criterion of improvement. The increased number of tons of coal mined

for each life lost disproves this assertion. The statistics are as follows:

Year.	Production per life lost.
1907.....	145,471 tons
1908.....	167,545 tons
1909.....	186,567 tons

The loss of life per million tons of coal produced was consequently:

1907.....	6.80
1908.....	5.96
1909.....	5.36

The Bureau of Mines does not pretend to take all the credit for these remarkable results. Public opinion following the four serious explosions in December, 1907, did much to arouse operators and miners to a realization of the dangers. It was the Government, however, which directed the movement into orderly channels.

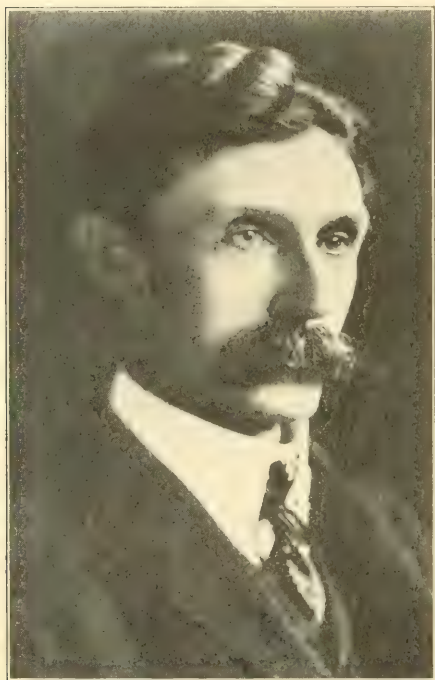
The Bureau of Mines as a part of this campaign for mine safety demonstrated the explosibility of bituminous coal dust and that it is even more deadly than gas. Theretofore in mines free from firedamp, little attention was given to coal dust. Now as many efforts are made to prevent dust explosions as were formerly made to avoid explosions of gas. To this work the Bureau of Mines gave intelligent direction.

Investigation proved that the most serious disasters occurred in the late fall and winter. The Bureau's experts explained this by proving that the mines were driest in winter and therefore the

coal dust was more liable to explode. The proved theory is: Mine air in winter is warmer than outside air. The cold air entering the mine naturally rises in temperature and in doing so absorbs the moisture of the mine. This process continues until the mine is perfectly dry and also the coal dust. Such a condition is ripe for an explosion.

The first suggested remedy was the use of such explosives as the Bureau of Mines had found to be reasonably safe in either gas or dust.

The second suggestion was that all



Dr. Joseph A. Holmes.
DIRECTOR BUREAU OF MINES.

dusty mines be kept wet, by spraying water, or by turning the exhaust steam into the ventilating current. To these methods a bulletin of the Bureau of Mines added: "The other way is to mix or cover it with rock or shale dust, clay or sand. If the coal dust is wet enough it will not ignite; if there is enough unburnable dust mixed with it, a flame will not spread."

This solution of the problem is now in the hands of those who must apply it. The Bureau of Mines has done part of its work.

To carry investigation still further the Bureau of Mines has established an experimental mine at Bruceton, Pa., twelve miles from Pittsburgh, Pa. This is the first of its kind in the world.

It was proved by work in the experimental tube or gallery that coal dust would explode, but because the gallery would not stand the force of big explosions, the work was always limited. If the experiments could be made on a larger scale, it would be possible to reproduce actual mining conditions. It is reasoned that when the exact conditions under which explosions take place are understood, tests of various preventative measures can be undertaken with some degree of precision.

The experimental mine will be operated to prove or disprove in practice the theories evolved at the Pittsburgh gallery.

A secondary purpose will be a study of the explosives placed on the Permissible List for use in gaseous and dusty mines. Still another purpose will be the testing, under mine conditions, of gasoline motors to determine their safety. It is probable also that many devices will be tested to make the study complete. The Bureau having obtained laboratory results now wants the real truths.

The Testing of Explosives.

The Bureau of Mines has a completely equipped experiment station at Pittsburgh, Pa. Here the various explosives used in coal mining are tested to determine which are the safest.

When the Government took up the investigation of explosives, it found such variation in their strength and such reckless use of them that it might be said the miner took his life in his hands almost every time he touched off a fuse.

In addition, such large quantities were used as to preclude the possibility of safety. The mortality statistics prove this contention. Fifty per cent of all the fatal accidents and 39 per cent of the non-fatal accidents are the result of falls of roof and coal. The disturbing and jarring effect of the discharge of large amounts of explosives is one of the most important causes of the fall of roof. The heavy shot often weakens the roof so that months after, without warning, it falls.

To remedy such conditions the Government proceeded to standardize explosives. Manufacturers of explosives were invited to send in their explosives to be tested and they responded readily. The tests were conducted in the great steel cylin-



Resuscitating a Miner with the Oxygen Treatment; a Part of the Rescue Work.

der, 100 feet long and six feet in diameter. Those explosives that did not ignite the gas or coal dust, after repeated trials, were passed upon as "Permissible Explosives."

They proved conclusively that black powder, in repeated tests, never failed to ignite the gas or coal dust. Because it was dangerous, there followed the immediate abandonment of the use of black powder by many operators. As a result of the Government's efforts, the use of black powder in dangerous mines has been prohibited in certain states. In 1908, the coal mines used 2,000,000 pounds of short flame explosives; in 1910 they used almost 12,000,000 pounds which is more than is now being used in Great Britain after many more years of experience.

Since the bureau was organized, it has placed fully equipped rescue cars: At Wilkes-Barre, Pa.; at Trinidad, Colo.; at Evansville, Ind.; at Rock Springs, Wyoming; at Billings, Mont.; at Huntington, West Va.; and at Pittsburgh, Pa. In addition the bureau maintains rescue stations at Pittsburgh, Pa.; Knoxville, Tenn.; Birmingham, Ala.; Urbana, Ill.; McAles-ter, Okla.; and Seattle, Wash.

Each rescue car carries a mining engineer, a miner trained in rescue work

and a miner trained in first-aid-to-the-injured methods. Each station is in charge of a foreman who is a practical miner, trained in rescue work. The stations and cars have complete outfits of oxygen helmets, which permit breathing for two hours in deadly atmosphere; oxygen reviving apparatus used in bringing asphyxiated miners back to consciousness; a collapsible steel cage, to take the place of one shattered by an explosion; a portable telephone for use in the mine; safety lamps, etc.

Within the last twelve months 5,000 miners have been trained in rescue work. These men will volunteer their services whenever there is a disaster. Each Bureau of Mines rescue car has a specified territory over which it travels, visiting the mining camps and demonstrating the use of the oxygen helmet, etc.

More than 5,000 men are injured in the coal mines of the United States every twelve months. The death or the permanent disabling of these men is often due to the fact that they did not receive intelligent emergency treatment at the time of the accident. It is to remove this condition that this elaborate work is carried on by the Bureau.

When the Government started to dem-

AMERICAN MINING CONGRESS

onstrate the need for rescue work, rescue apparatus, such as the oxygen helmet and oxygen reviving apparatus, were practically unknown in the United States. Today there are more than 300 oxygen helmets in use. In the last two years, between thirty and forty coal companies have purchased full rescue equipments and have crews thoroughly trained in rescue work. All of this is the result of the work of the Bureau of Mines.

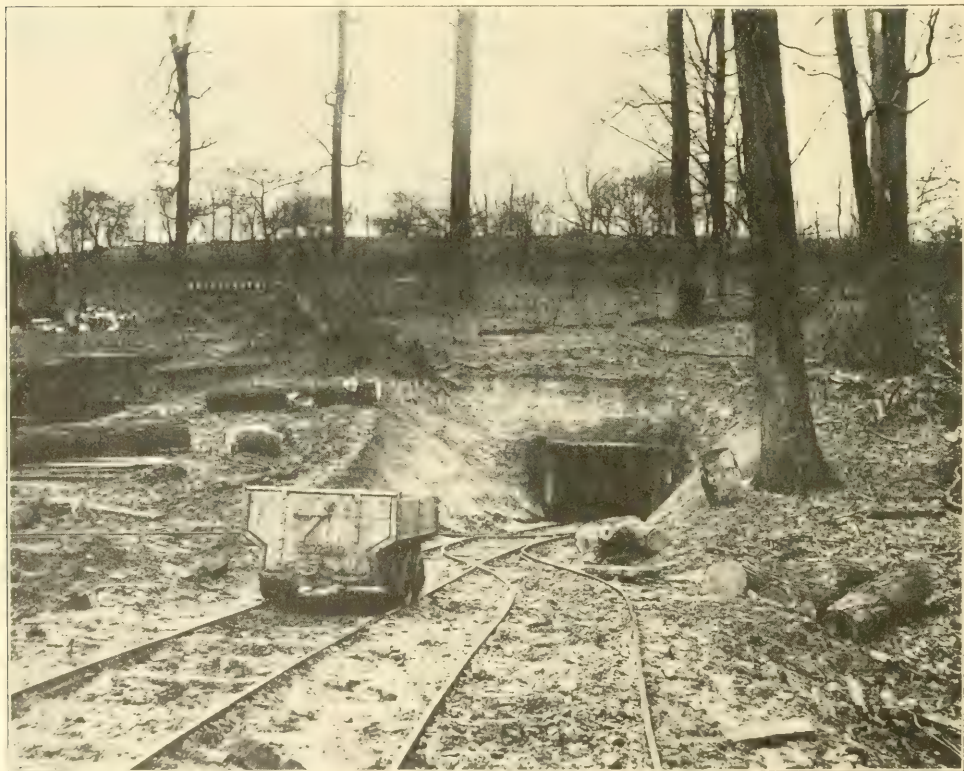
In addition, the Bureau has recently begun the publication of a series of circulars written in plain, non-technical English for the benefit of the miners. One circular describes the Permissible Explosives and how they should be used; another explains the dangers of coal dust explosions and how to avoid them. These circulars are now in the hands of several thousand mine superintendents, fire bosses, and miners and they are being sent out each day to those who apply for them.

No nation can be prosperous without an abundant supply of fuel. Some countries have awakened to this fact too late,

but the United States has begun important investigations in plenty of time to conserve the supply. But the investigations into the waste in the mining and in the consumption of coal have not begun too soon. The consumption of coal in the United States has doubled with every decade since mining began. Without a serious lessening of the present rate of coal consumption, either through more efficient use of this fuel or the extensive developments of substitutes for it, the middle of the next century will find the nation's supply of easily workable coal so largely depleted as to bring serious hardships.

Investigations by the Bureau have shown that the waste of coal in mining aggregates probably 200,000,000 tons yearly, of which at least one-half might be saved.

No accurate estimate can be made of the unnecessary losses due to improper use. The urgent need for investigation is indicated by the facts that in the vast majority of the power plants less than 10



Opening of the Experimental Mine of the Bureau of Mines, Bruceton, Pa.



The Shot Which Causes Explosions at the Pittsburgh Testing Station.

per cent of the heat units in the coal are converted into actual work, and that in lighting plants, not more than one-seventh of one per cent of the heat value of the coal is converted into electric light.

From the 40,000,000 tons of coal which are converted into coke each year, by-products are wasted, which, if completely saved would aggregate an annual value of more than that of the coke itself. This would include sulphate, 2,400,000 tons, sufficient to fertilize our farms; creosote for the preservation of our timber; and pitch enough for briquetting our slack coals, roofing our houses and repairing some of our roads.

It is of the utmost importance to the nation as a whole that our fuel supplies be used without unnecessary waste and with the highest obtainable efficiency, in order that it may decrease rather than increase the cost of power, heat and light to the American people, in spite of the necessary future increase in the cost of mining operations resulting from sinking deeper shafts and taking coal from thinner seams. These are the reasons for the

fuel investigations of the Bureau of Mines.

At the Pittsburgh plant of the Bureau of Mines, efforts are being directed toward the decrease of this double waste. To improve combustion methods, the Bureau is testing coals under various conditions, in various types of boiler furnaces, in pressure and suction gas producers supplying the gas for the operation of gas engines, by making the coal into briquets and then testing their efficiency in various methods of combustion. Here is a measure of results: The Government purchases \$10,000,000 worth of coal each year, and the public who buy nearly \$2,000,000,000 may ultimately save from 5 to 10 per cent on their fuel bills as a result of these investigations. If the economy reached but 5 per cent this would mean a saving of half a million dollars to the Government each year and one hundred million dollars to the public.

When the Technologic Branch of the Geological Survey began its investigations to increase the efficiency with which fuels are used, it had installed at its plant a gas producer and a gas engine of 250

horse power. The gas producer and engine were hardly known in this country at the time, but experiments in Europe had indicated the ability of the producer to turn coal into gas at little cost.

The tests by the Technologic Branch and the Bureau of Mines have not only demonstrated that the gas producer and engine are cheap producers of power but have also shown that many fuels of such low grade as to be worthless for steam power purposes may be economically converted into producer gas. Coals containing as much as 45 per cent of ash, and lignites and peat high in moisture have been successfully converted into producer gas, which has been used in operating gas engines. The tremendous saving of the fuel resources of the country through the utilization of these low grade, worthless fuels can be readily seen.

It has been estimated that, on an average, there was developed from each coal test in the gas producer plant two and a half times the power developed when used in the ordinary steam boiler plant, and that relative efficiencies will probably hold good for the average plant of

moderate power capacity, though this ratio may be greatly reduced in large steam plants of modern type.

It was found that the low-grade lignites of North Dakota developed as much power when converted into producer gas as did the best West Virginia bituminous coals when used under the steam boiler. In this way, lignite beds underlying from 20,000,000 to 30,000,000 acres of public lands, supposed to have little or no commercial value, are shown to have a large value for power development.

Another important feature of the work of the Bureau of Mines in conserving the coal supply is the manufacture of briquets. These are composed of waste bituminous coal or anthracite coal mixed with 6 to 7 per cent of gas pitch, the whole pressed into cakes or briquets by powerful machinery.

To sum it all up, the Bureau of Mines has studied the coal mining business and has applied the remedy to the sore spot. The Bureau is not through with its work; it has, in fact, only begun to work. These are a few of the things which have been accomplished in a few years.



The Experimental Chamber at Pittsburgh Immediately Following an Explosion.

THE MINING MAN'S INTERMEDIARY

By James F. Callbreath, Jr.

Undoubtedly what the united mining industry will want to know is:

If the coal trade needs a national voice—a voice to plead its cause in Congress and to present its perplexities to the people;

If the metal mining industry needs a mediator, a persuasive influence or a concrete power to set it right with Congress and the people; and,—

If the nation itself needs expert advice upon what to do with the exhaustible natural resources, underlying land within its control, what is the American Mining Congress that it should lay claim to ability to fill these manifold and exacting positions?

Using the intensified and searching

business question of the hour: What has the American Mining Congress done to warrant the support of so big an industry as mining? Is it one of those helpless inefficient things known as associations, admittedly unable to stand upon its own legs and for that reason obviously incapable of carrying the weight of great industries? Or, is it a real power?

In putting the Congress thus boldly upon the grill, it may seem a lack of modesty for me, while in charge of its executive department, to make extravagant claims for it or to embellish its achievements. What follows would be decidedly immodest were I, the messenger and the executor of plans, to claim credit for its achievements.

The fact is that the American Mining Congress is, in the best sense, an association of the individuals who make up the mining industry. What it has done has been the resultant of that peculiar and somewhat mysterious force known as the expression of a consensus of opinion of the strongest men in a great undertaking. Even telling so much is only telling one half of the strength of this Congress. Perhaps it is not even one half. To accomplish such things as have actually been achieved there must be harmony between those who initiate and those who have the last word to say on legislative matters in states and in the Federal Congress. I might say, therefore, that the real power of the American Mining Congress is a composite of that possessed by the members and of those influential in politics. Thus the Congress is not merely an association; it is an institution. It is an amalgamation for one purpose of men in the mining industry and of those in the legislative halls who have the welfare of the mining industry



John Dern.
PRESIDENT OF THE CONGRESS.

AMERICAN MINING CONGRESS

at heart. The one suggesting or pleading and the other understanding and enacting make up the strength of this institution.

In that statement is disclosed the source and character of the power

mental in having passed through Congress the measure which created the Bureau of Mines at Washington.

It has presented a report on the standardization of electrical equipment in coal mines which made suggestions that are coming to be almost universally adopted.

Out of the chaos of conflicting opinion on that subject, it has found a workmen's compensation act which in form and substance meets the approval of the best men in the industry.

It has prepared a simplified code of mining laws which will be reported and possibly adopted by the Chicago convention in October.

It was the first to recommend that



James F. Callbreath, Jr.
SECRETARY OF THE CONGRESS.

which accomplishes. There is still unanswered that insistent question: "What has the Congress done?" I answer in short sentences and in outline:

It has increased gold production.

It has started a movement to prevent, by legislation, fraudulent mining companies from mulcting the people.

It is one of several factors which brought into existence the great Roosevelt drainage tunnel which relieved the Cripple Creek Mining district.

It has taken a leading part in the discovery of devices and methods by which accidents in mines might be limited.

It was in no small measure instru-



S. A. Taylor.

A DIRECTOR OF THE CONGRESS.

Alaska should be accorded a territorial delegate in the National Congress.

It was the first to recommend that the Department of Justice should sue

to set aside the title to mineral lands which had passed to the Pacific Railroad.

It was the first to appoint a committee to make a thorough investigation of the Alaskan coal fields with a view to doing justice to that section.

Upon this record the Congress stands, in answer to the business question: "What have you done?"

How it has been possible to accomplish so much is not understood until a few words have been said about the origin of the Congress and how it progressed in efficiency and organization. It was organized in Denver in 1896 as the International Gold Mining Convention and was the spontaneous coming together of mining men to meet a crisis.

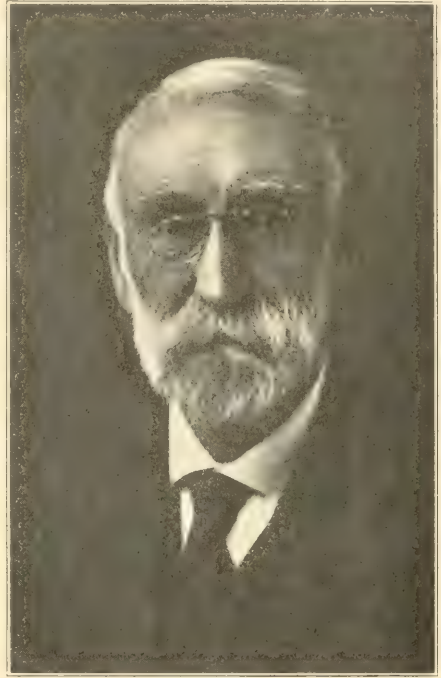


J. H. Richards.

FORMER PRESIDENT OF THE CONGRESS.

Silver, theretofore the principal item of production in those western states, had just been demonetized. If gold alone was to bear the burden of foundation-

ing the nation's credit and currency system, the production of it must vastly be increased. To do this seemingly simple thing, gold bearing ores must yield more of their precious metal. Confronted by a problem—and this



Dr. James Douglas.

DIRECTOR OF THE CONGRESS.

shows the effectiveness of the Congress—the metal mining men solved it at the first meeting. John Dern of Salt Lake City, Utah, now president of the Congress, explained how by the application of cyanide to the treatment of the gold bearing ores, there might come the necessary increase in production.

The presentation of the idea was not sufficient. Promulgation of it was everything. It is enough to say that through even the crude organization of the American Mining Congress at that time, this information was so disseminated that gold production was revolutionized and that the advantage to the business world has been phenomenal.

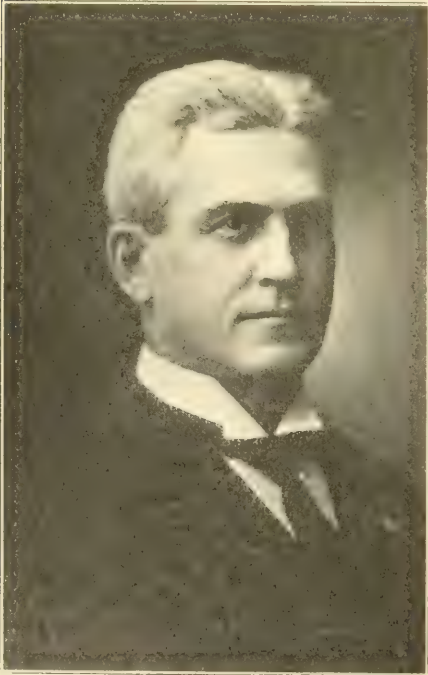
AMERICAN MINING CONGRESS

From this modest and yet auspicious beginning, the Congress grew. It started from Colorado but it soon came to cover with its influence the metal mining business of this continent, including three nations. As it grew, the nerve center was retained at Denver, but its ramifications were co-extensive with the metal business of the continent. At first as auxiliaries to the national organization there grew up state organizations. As auxiliaries to the state organizations there grew up local or district organizations. Denver was the radial center but each state had its own secretary or its own executive, and now each district is having its own executive officer. In all departments its aim is, and has been, to help solve the problem of the mining industry. If a local problem, like the draining of the Cripple Creek district, had to be undertaken, that was the work of the state



E. R. Buckley.

FORMER PRESIDENT OF THE CONGRESS.



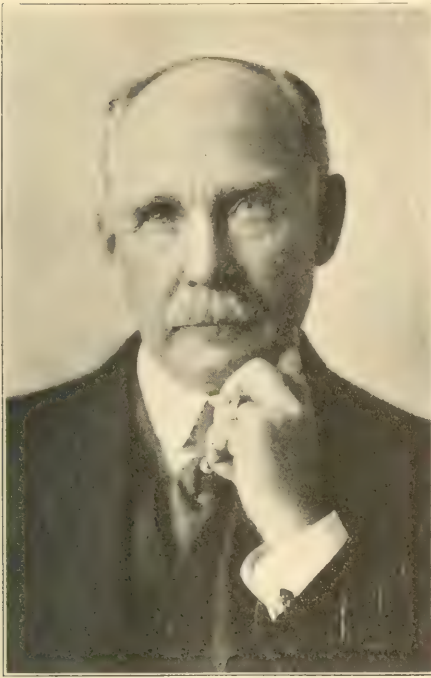
A. G. Brownlee.

DIRECTOR OF THE CONGRESS.

organization. If there was a matter like the equalization of taxes, that was a matter for the local organization. If there was a matter involving the passing of laws in states, it was a burden upon the state organization and those local organizations affected.

But when it came to the bigger policies like the creation of the Bureau of Mines, like the reform of the public land question, like doing justice to important interests in Alaska, like getting at the vital facts in workmen's compensation, electrification in mines, and the greater safety of lives of the miners, it was a burden upon the whole Congress.

Having served its apprenticeship in drainage matters, in equalizing taxation, in increasing the production of gold, and in the improvement of methods in mines and smelters and having with success inserted itself into some of the largest questions of the nation, the



D. W. Brunton.
DIRECTOR OF THE CONGRESS.

American Mining Congress feels ready to enter a broader field. It is willing even to undertake a partial solution of those great problems which have bothered the industry and perplexed the Government. This is a big thing to undertake but the Congress does not falter.

The gravity of this matter is seen in the metal industry. The Government is at a loss to know what to do with the minerals underlying the public domain. It knows that there is a vast amount of wealth stored in those lands. It feels—and no disrespect to anyone is intended—in a vague and intangible way that somehow and soon the rights to that property must be preserved to the people while giving proper rewards to those who have the daring and the money to prove the existence of those deposits.

The Government at Washington, busied with a million things and constantly harassed by problems at home and abroad, physically cannot undertake the work of finding all the mineral and, in addition, so apportioning it as to do justice to all. It cannot, except at a prohibitive cost, even find those who are familiar enough with such matters to present a disinterested opinion.

On the other hand, included among the members of the American Mining Congress, are those who see the problems aright and have the skill and ingenuity to find a solution. With the American Mining Congress as the intermediary, it is not impossible—far from it—that the Government authorities and the men who know should be brought together and the problem solved. To accomplish just that intro-



E. A. Montgomery.
DIRECTOR OF THE CONGRESS.

duction is the main purpose of the American Mining Congress.

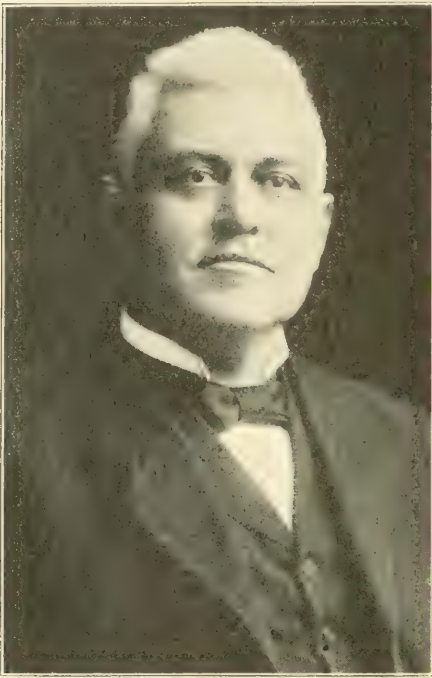
In the matter of coal, the great intangible, impersonal, and changeable Government—changeable as to personnel—cannot take the time from its manifold duties to solve the problems of practical conservation. It cannot go into the minute details in mining and in use which real conservation demands. It cannot simplify and

know the short cut to the solution of all these problems. These men not only can but gladly will tell the Government what is the right thing to do. And, what they recommend will accomplish what both the people and the operators want.

The position of the American Mining Congress is that it can and will act as an intermediary between the Government and those coal operators who know. That is the work to which the American Mining Congress is dedicated.

It is well here to consider this: That which has been accomplished by this Congress has been the work of the metal mining men, mainly, in conjunction with those national and state representatives who were familiar with the metal mining business. Now there is to be added the power of the coal field. Already the energy of some of the most resourceful operators in this country has been enlisted in the cause. Before another year, perhaps the majority of the powerful operators of the nation will have added their support. Thus, through this Congress, producers and legislators will be brought together to solve the problems common to the trade and the people.

I have presented in retrospect, in present situation and in prophesy the field of the American Mining Congress. If it tells anything, it tells of work well done, of work carefully planned, of propagandas in the course of promulgation, and, the principal thing, of a tremendous amount of unfinished work. We are all human in this organization and we know that the millennium does not come over night. We do not promise an instantaneous solution of these tremendous questions which have puzzled this country for several generations. We do believe that through this organization or something very closely akin to it lies the hope of a solution if one is to be found at all.



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Martin D. Foster.

CHAIRMAN OF THE COMMITTEE ON
MINES AND MINING OF THE HOUSE
OF REPRESENTATIVES, WHO MUST
PASS UPON ALL MINING LAWS.

harmonize the laws of states which endeavor to make more safe the working conditions of the miners and to regulate without robbing the producers.

On the other hand, the coal business has among its operators those who

THE PROGRAM AND THE SPEAKERS

Subjects Are So Arranged That by Following From One Address to Another, the Public May Arrive at a Clear and Complete Understanding of the Essentials of Mining.

If the problems of the metal and coal mining industry are to be solved by co-operation with the Government and if the American Mining Congress is to act as an equalizing influence, then the Congress must show itself sufficiently familiar with the subject of mining to presents its problems clearly and accurately. This special fitness shows itself in the program of the forthcoming meeting. Before any one was invited to speak, there was a complete analysis of the whole subject and the crucial points alone were chosen for discussion. Next there was a division of each point into phases. When it had finally been decided what needed discussion and clarification, men fitted to say a final word on some one phase were asked to speak.

As a consequence of this close study of subjects and men the program committee finally decided upon the following general outline:

Tuesday afternoon, October 24: Addresses of welcome and five minute responses by representatives of various states.

Tuesday evening: The mining industry and the public—probably a smoker.

Wednesday morning: A discussion of the economics of the coal industry.

Wednesday afternoon: A discussion of the Alaskan coal situation, its relation to Alaska's commercial development and to the public lands question of the west.

Wednesday evening: A discussion of the public lands question of the west as related to the mining industry.

Thursday morning: The conflict between the Sherman Act and the mining industry; its influence upon producer and consumer.

Thursday afternoon: A continuance of the morning discussion and—
Addresses on Workmen's Compensation.



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Walter L. Fisher.

SECRETARY OF THE INTERIOR.

tion and the need for study before further action.

Thursday evening: An illustrated lecture on the problems of the coal industry.

Friday morning: Will open Government day. It is expected to have addresses by Secretary Fisher and the ministers of mines of our neighboring countries, Canada and Mexico.



Carl Scholz.

HE WILL DISCUSS GERMANY'S
METHODS.

Friday afternoon will be a continuance of Government day with addresses by Martin D. Foster, chairman of the committee of Mines and Mining of the House of Representatives and by other members of the committee.

Friday evening: A continuance of the discussion of the economics of the coal industry.

Saturday morning: The convention will be appropriately ended by an address in Orchestra Hall by President Taft.

The first and most careful consideration has been given to the greater safety of life and the more complete recovery of mineral from the ground. Those questions must be settled right before the industry may hope to succeed. Practical suggestions are expected to be made showing how these desirable things may become realities. In order that practicality may supplant theory

particular study will be given the expense which these things must entail and how this burden shall be borne.

With so much ground cleared, the next logical step is to clarify the subject of the economics of coal. If it costs money to recover coal completely from the ground and to make the lives of miners more safe, from whence is the money going to come.

That raises two questions: First, is the industry rich enough to pay the bill; if it has not the money, why is such an important industry so impoverished? And, how may the defect be remedied?

Second. If the industry has the money, how can it be diverted to this public purpose without violating the fundamental laws of the land which safeguard the rights of private property and that possession?

To discuss these questions, men have been chosen for their particular fitness to find the truth and present it in such form that the Congress may thereafter know how to proceed.

While the Congress makes no effort to dictate what any speaker will say, the committee members know that the facts when developed will suggest the need for closer co-operation between the Government and the coal industry. That requires the Congress as the next step to determine what is the proper disposition for the Government to make of its own coal deposit? That calls, as a primary matter, for a clear understanding of what the Alaskan coal situation means to the people of the United States.

It is apparent that if the Government can solve the coal question in Alaska, it will be able to dispose of the coal underlying the public domain in the West. It is apparent that the Government cannot ask the people of the West to accept less in opportunity than has been accorded the people of the East. These two fields adjoining and competing and the Government having adopted a sound policy with respect to

the West, it may be adopted, by emulation at least, into the more completely developed coal fields of the East. This sounds like idealism, but it is nothing more than must be done eventually and the American Mining Congress hopes to speed the solution.

On Wednesday afternoon, Alaska and its coal needs will monopolize the time. As dovetailing into that will come, in the evening, a discussion of the public land question of the west. The men chosen to discuss these subjects have been selected for their fitness to handle such bothersome matters.

Having analyzed to the quick and the rough places on these matters having been made smooth, we come to the crucial session of Friday morning when the Government itself appears through representatives.

Before that session the Congress itself will have produced and analyzed the facts. The product—a complete summary—will be made known to the Government speakers. It will then be for them to express themselves. It may be that upon such vitally important matters, the Government representatives will not be willing to commit themselves. At any rate, it is expected to have as speakers Secretary of the Interior Walter L. Fisher and representatives of the mining departments of Mexico and Canada. Secretary Fisher may say what the Government can do. The visitors from Canada and Mexico will tell what their nations have done.

On Friday afternoon Martin D. Foster, chairman of the committee of Mines and Mining of the House of Representatives will tell what Congress can do in the way of legislation. He will be followed by the other members of the same committee. It must be apparent that this session of the American Mining Congress promises to be the beginning of a new era of the mining industry.

As to what President Taft will say on Saturday it is not proper even to conjecture. He will have completed a tour of the states and will have absorbed the western spirit. His address will have a note worth hearing. The hall chosen for this meeting is large enough to house all who are vitally interested in this one subject.

Concerning those other men who are to discuss important questions. It must be remembered that at the time this is written the meeting itself is more than six weeks away. Those who are authorities upon these subjects, are by reason of that fact busy men. They are willing to help, but cannot command their time sufficiently to commit themselves thus far in advance. It has been and is the policy of the American Mining Congress to make no promises which it cannot fulfill. For that reason the



Walter E. Clark.
GOVERNOR OF ALASKA AND AN
IMPORTANT FACTOR.

Congress prefers to mention no names unless sure that they will be present. Upon a few things the Congress may speak with confidence, barring the unforeseen and the unknowable. The question of workmen's compensation will be discussed by men of broad understanding, whose sympathies are with the workers, and whose conscience is committed to arriving only at a just conclusion. These men will discuss its legal, its economic, and its business phases. There can be no doubt that the truth of the matter will fall out as a consequence.

Than Dr. Joseph A. Holmes, there is not now in the public service a more brilliant mind, a keener student nor a more honest soul. Dr. Holmes is possessed of that peculiar mental faculty which takes tenacious hold of a subject and does not yield until the truth has been wrung from it. It is with great pride that the American Mining Congress announces that Dr. Holmes will give a public presentation of the coal question in its broader phases. He will use charts, diagrams and photographs all thrown upon a screen to illustrate the points he makes about the industry.

With that address as a foundation, the Congress will proceed to build the main structure of the coal industry. The economic aspect of coal will be presented by a scholar and a trained thinker who is accustomed to get a fact and then to determine its bearing. He will tell whether the coal industry is rich enough to meet the new demands now being made upon it and if not, how its present plight may be remedied.

Following him will be Carl Scholz, president of the Coal Valley Mining Company; vice-president and general manager of the Consolidated Indiana Coal Company and president of the Rock Island Mining Company. He recently, in the interest of the Bureau of Mines, toured foreign nations to study conditions and proposes to tell what the coal industry actually needs and what

the probable processes are by which it can obtain what it needs. This suggestion will follow his exposition of foreign conditions as he found them.

Martin D. Foster, Chairman of the Committee on Mines and Mining is expected to tell some of the influences which have been at work shaping legislation and, it may be, what is to be expected.

One of the strongest addresses will be statistical in character, but every figure will have a meaning.

G. W. Traer, who is an attorney and a coal man, will participate in the discussion of the effect of the Sherman Act. He knows the subject in both its practical and theoretical aspects.

These things are told specifically about a few men who are to speak. It is but an earnest of what the program will present.

Now, there is to be presented one matter which, while not a part of the historics of the Congress, is one of the most significant things about it. To have anything done in the way of reforming the mining industry, it is necessary to go to the state which really controls. This means, of course, going to the governor of the state.

So many new phases of the mining business are to be brought out, it will be worth while for the governors to know them. It has been decided to ask the titular heads of mining states to hold a congress here at that time to hear the discussions and to discuss the subject of uniform laws. It seems likely, at this early date, that such a meeting will be held.

As we go to press with this announcement, word has just been received that B. F. Bush, president of the Missouri Pacific Railroad will deliver the statistical address on coal. He has for years known coal intimately, having been president of a coal carrying road and of mining companies. He is at once a practical man and a student. No man in the country could handle the subject to better advantage.

CHICAGO

Coming Financial Power
Hub of Transportation
New Center of Steel
Originator of Ideas
and
Meeting Place of the Congress

In telling why the American Mining Congress decided to hold its meeting in Chicago in preference to any other place, the only purpose is to show how earnestly it is striving to get the facts. It does not leave out of question even such seemingly minor matter as local color. Chicago is to be sure the most centrally located city. It is within easy reach of the metal mines of the West and of the coal mines of the East. All this is too obvious for comment and really means very little. The mining

industry knows the seriousness of its problems and if convinced that a solution could be found, the mere matter of a convenient location would mean nothing in these days of quick transportation. Only concrete results appeal and men of the acuteness of those engaged in mining will go where they can obtain them. So the mere matter of fortunate location sinks into insignificance and something else comes to the front. What is it?

The Chicago Association of Com-



Chicago's Retail District from the Window of Marshall Field & Co.

merce says that Chicago has been so busy, since the fire of 1871, recovering from that catastrophe and securing for itself a place in the business world, it has had no time for civic or public matters. Chicago has been concerned principally with personal business questions—how to get results in the quickest and surest way. It has been so determined to win concrete results it has formed a habit of diving toward the center of commercial and economic questions to find their solution.

Chicago as a result of devotion to one idea, has piled up money. It has fitted itself with railroads. It has equipped itself with facilities for transferring commodities. Best of all, it has found the surest and shortest route to both the present commercial good and to the policy which assures commercial supremacy.

Only recently a financial statement showed that Chicago had on deposit in her savings institutions alone the magnificent sum of \$196,000,000. This money was not being sent to distant reserve centers nor was it employed in precarious or unknown occupations. Instead, the officers of the savings banks are studying the stability of home in-

dustries, are teaching the depositors to invest in the bonds of good substantial houses—thus this accumulating wealth is helping those industries to expand. The savings of those employed by these industries find temporary lodgment in the banks, from which they are soon withdrawn and go back into the industry again as a basis for even greater expansion. Thus there comes a further saving and a further profit, and in the end more money to turn into successful enterprises. Chicago has entered upon a period of compounding development.

Those who understand financing realize that money lending is an intimate enterprise. The man who lends the money must have an equal understanding of the business needs with the man who borrows. Chicago, with its tremendous amount of savings to invest—to say nothing of the resources of the other banks—has been placed in a position where it must know business. Among other things, Chicago has been thrown into intimate relations with the coal mines at her door and with the metal mines which lie to the west. There is no place where, upon a proper presentation, a broader hearing could be given the mining industry than in Chi-



Steel Mills at Gary, Indiana.

cago. There is no place where, when in need, the mining industry could find a more helpful suggestion. That is one reason why the American Mining Congress decided to meet in Chicago.

The western metropolis has been characterized in a thousand ways. Its perverse air currents caused it to be called the "Windy City." Its freedom of action and boldness of thought have caused it to be characterized as either breezy or common; the viewpoint of the critic determined the word. The Chicago people, who have come to know what lies beneath all this directness of action and speech, call it wholesome. It may be a trifle spectacular, but it is candid. So much for the characterization of the social side.

Some architects, some few painters, and one or two aesthetic writers from other cities have called Chicago ugly. Any place of business is ugly to the man who is not in business. Any piece of machinery is ugly to the man who does not love machines. Chicago, in reality, is a titanic machine, designed and created to grind out commercial and industrial results. It has a core of steel and its decorations are encircling and pendant railroad tracks. Central

business blocks are encircled by surface car tracks. The retail district is girdled by the elevated loop. The city proper is surrounded by four belt railways. And twenty-two lines of railway extend to a national boundry at every point in the compass.

It has a river in its center, a river on its southern boundary, and a lake on its eastern front. These connect with the iron ore mines of Minnesota and the grain markets of Liverpool and all Europe.

Beginning at the lake front and cleaving to the water course, for a time, Chicago's railroads extend directly south to the Gulf; southwest to Southern California; west to Puget Sound; north into the timber and mineral country; northeast into the heart of Canada; east into New England and New York; southeast to Florida, and south again to the Gulf. Chicago, in fact, is the hub of the railway system of this continent. It has more exchange business in freight than any other three gateways combined. Its twenty-two railroads explain all that.

Chicago has, on its southern fringe, the great steel mills of South Chicago and of Joliet; now it has the new plant



The New Steel Center.

of the United States Steel Corporation at Gary, Indiana.

Some have tried to make it appear that in locating its new mill at Gary, Indiana, the Steel Corporation has made a mistake. What they left out of consideration is that the big development of the next generation will be west from Chicago. They left out of consideration that Chicago is the radial center of all the prospective industrial expansion of the next few generations. Gary on the southern fringe of Chicago is on the threshold of the new territory.

In that respect Chicago represents for the west what Pittsburgh and New York jointly represent for the east. It has the coal at its door in the mines of Indiana and Illinois. It has the iron ore of Minnesota within easier reach than any other producing center. The coal and iron ore meeting at the steel mills at Gary and South Chicago will

make the cheapest possible kind of steel and pig iron. With the money in Chicago's banks and with the steel products in Chicago's suburbs, the city itself presents to the west even better facilities than Pittsburgh and New York have been able to present to the great eastern territory which at present is the center of steel consumption.

Because of its peculiar location, its wealth, its vigor, its clearness of mind on business and its facilities of a thousand kinds, what more logical place could there be for an assemblage of business men to arrive at the solution of great and bothersome problems than the city of Chicago. In every phase it has already solved its most intimate questions; it can give others the right mental attitude for solving their own or a practical hint if that be necessary.

To apply to its own problems this spirit of energy is why Chicago was chosen as the meeting place.



Giving an Idea of Chicago's Railway Facilities Near the City's Heart.



The La Salle Hotel, One of Chicago's Newest Institutions.

It is here that the meetings of the American Mining Congress are to be held. Also, President Taft, on the day that he is the guest of the Congress, will occupy "The President's Suite" in this hotel. In connection with the Congress will be an exhibit of mining machinery which will be under the same roof. The hotel is centrally located and new.



Banquet Hall of the La Salle Hotel Where the Meetings Will Be Held.

WESTERN PROBLEMS

(Concluded from page 8.)

recommend for the action of Congress a complete code of mineral land laws.

This plan seems to provide a method of determining the actual conditions and arriving at a correct solution of some very troublesome questions.

The Alaskan question is one calling for prompt and vigorous action. Upon this there is a general agreement, although a wide diversity of opinion exists as to what should be done.

The public lands question of the West manifests itself in most aggravated form in Alaska, because practically all of its territory is still in public ownership. The failure of the Federal Government to act upon applications for patent upon which it is asserted that every requirement of the law has been met, has brought forth a storm of criti-

cism and protest from Western men.

In 1904 at the Portland Session of the American Mining Congress, Ellis H. Roberts, then director of the United States Mint, said:

"I feel that Alaska has not had generous or even just treatment at the hands of the General Government."

The West stands for the absolute and speedy enforcement of the law in Alaska as elsewhere and urges that a speedy determination of disputed questions shall be made leaving the making of new laws to be based on actual knowledge obtained from those who are familiar with conditions. It is obvious that a special study of those conditions by Congress is very important in order that any changes made in the public land laws may be based upon actual knowledge of the situation for which a remedy is sought.

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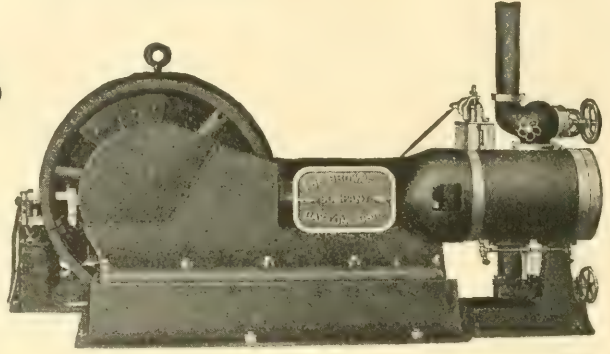
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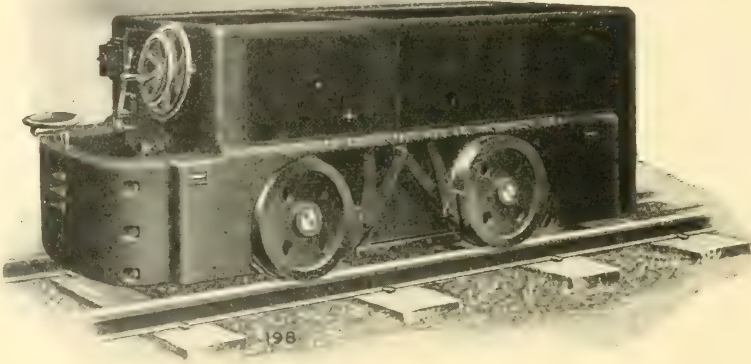
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7-Ton, 35 H. P.
Locomotive



Milwaukee Gas Driven Locomotives For Mine Service

- ¶ Afford the most efficient mine haulage systems at a minimum expense for operation and up-keep.
- ¶ At one coal mine in Eastern Pennsylvania this type of locomotive displaced eight mules and several men, and reduced the haulage costs to less than two cents per ton mile, beside improving the sanitary conditions within the mine.
- ¶ You can operate a Milwaukee Locomotive wherever you can run a mine car—over rough, uneven tracks, around sharp curves and in workings of restricted area.
- ¶ These outfits are self-contained units of power. Their use eliminates the necessity for auxiliary power plants, expensive overhead wiring and bonding of rails. When not in operation they consume no power but are always ready for instant service.
- ¶ Milwaukee Locomotives are rugged, compact equipments and provide extremely flexible systems as the mine workings expand.
- ¶ They are built in different sizes and for various gauges of track.
- ¶ If you want to learn more about this safe, economical and efficient motive power

*Write today for Publication S-101
fully describing and illustrating them*

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WOOD - STEEL - CONCRETE

The illustration shows the Steel "Link-Belt" Tipple of the Burnwell Fuel Co., at Witt, Ill. It is equipped complete with "Link-Belt" Bar and Shaking Screens, Weigh-Hopper, etc.

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raising, or upper hole drilling for any purpose, will cost you least per foot of hole, or per cubic foot of ground removed, if your drills are

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Mine Managers who have conducted severe tests with Sullivan Stoppers and with other makes, will tell you that this is so. They will tell you, too, that *great speed*, *high power economy*, and *remarkable freedom from breakage and wear* are factors in accomplishing this result.

Runners will tell you that the "DA21" works *more smoothly* and with *less jar and vibration* than other tools; also that it is easy to clean and care for because it contains *no screw joints*, and every part can be reached by loosening three nuts.

We want to tell you more about *what* this drill is doing, and *how* it is able to do it.

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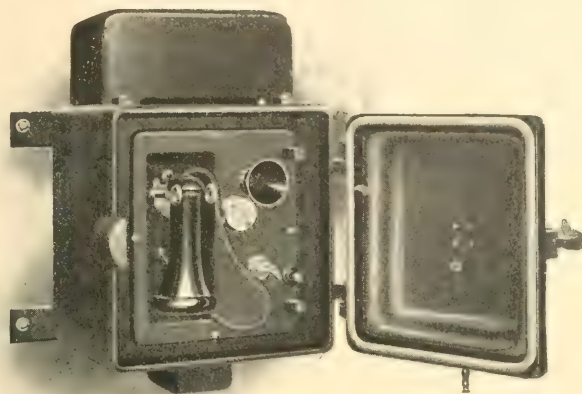
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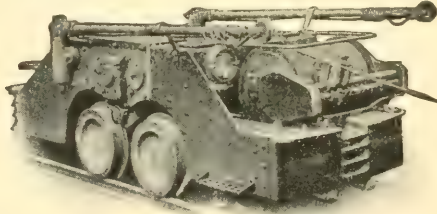
Unbreakable Frame: The central body a single casting, making a substantial housing for the working parts. Side frames of plate steel; ends or bumpers of annealed cast steel. This unbreakable construction marks the highest type or modern development in mine locomotive design and is superior to any practicable assemblage of simple structural shapes, as these have not the rigidity necessary for carrying the mechanical parts of a hard-working machine, operating over rough and frame-racking roadways and subject to every sort of distressing "punishment."

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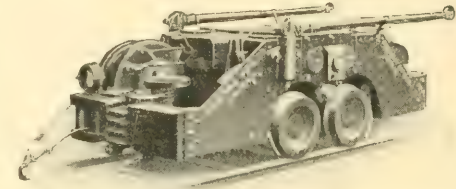
Compact Construction. Dimensions of length and height must be as small as possible in a gathering locomotive which is to operate into the rooms. Short wheel bases and small wheels are advantageous, and a flexible truck is necessary for following poorly laid tracks. Shortness is essential in operating with close hitches around room curves of small radius.

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Suited all Conditions For every type and size of Goodman Gathering Locomotive there is provided a variety of equipment to enable realization of highest efficiency in the work to be performed.



**Type 2600 Gathering Locomotive,
with Electric Cable Reel**



Goodman "Universal" Gathering Locomotive

The Whole Story in Our Bulletin 502. It's Too Long to Tell Here.

Goodman Manufacturing Company

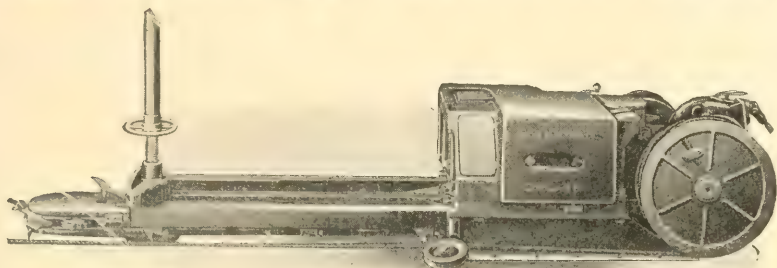
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We will be represented at Exhibit Room No. 1811 at the La Salle Hotel during the Congress.

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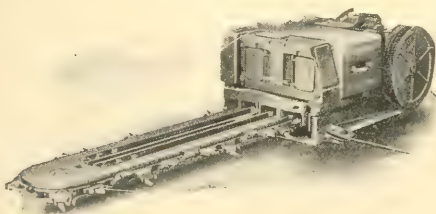


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Applying the continuous-cutting principle of the Goodman Long-wall Machine to a machine for Room-and-Pillar work. Especially valuable for working in thin coal or under very bad top.

Every operation —unloading, sumping, cutting, moving and reloading is made by the machine's own power, a feature of special advantage under low roof, where crow bars are not easily handled.

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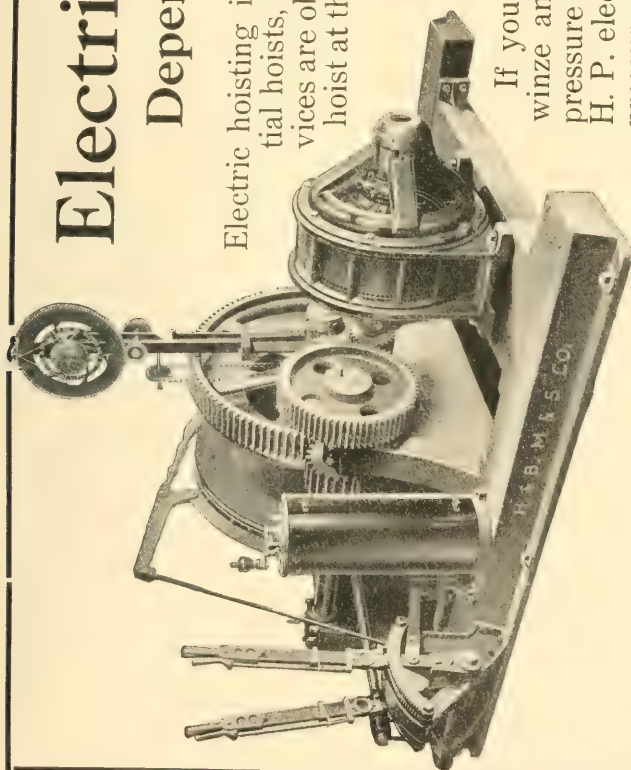
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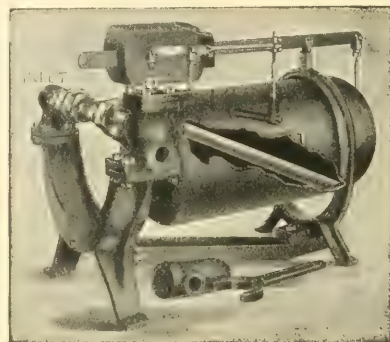
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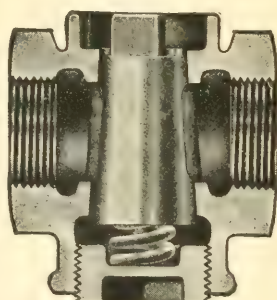
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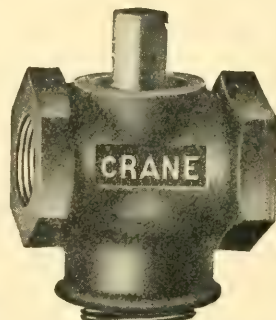
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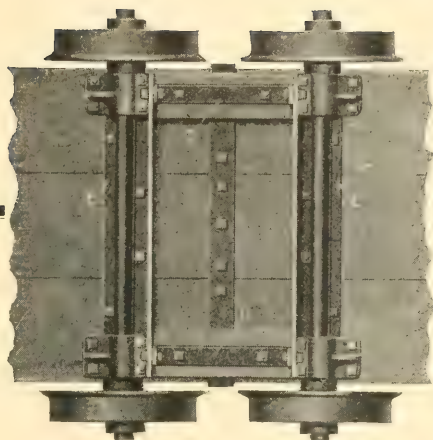
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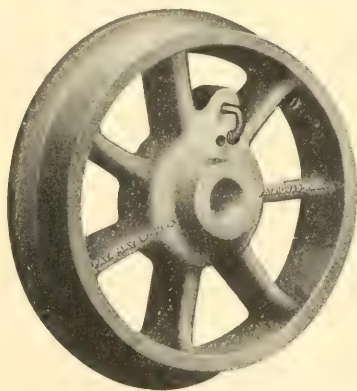
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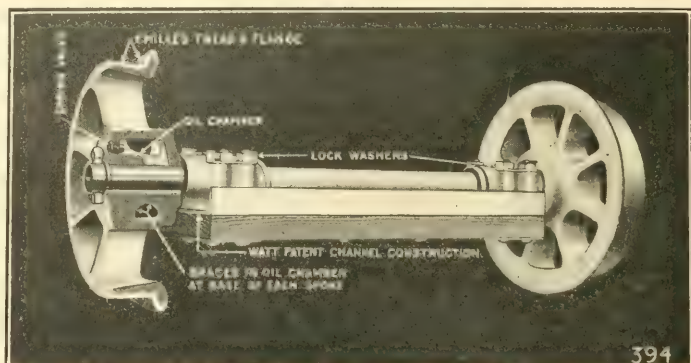
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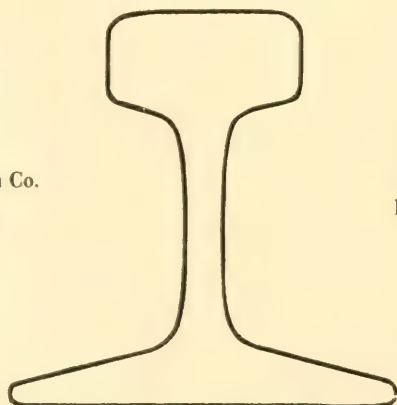
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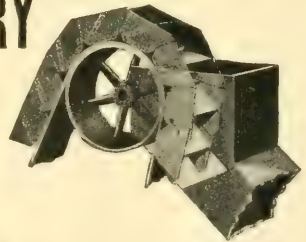
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These buckets overlap one another in such a way that a continuous steel trough is formed on the rise of the elevator and around the head pulley. A projecting lip on each bucket prevents material from touching the belt or from falling back of the bucket and puncturing the belt.

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Conveying, Screening, Transmission Machinery. Chicago First National Bank Bldg.

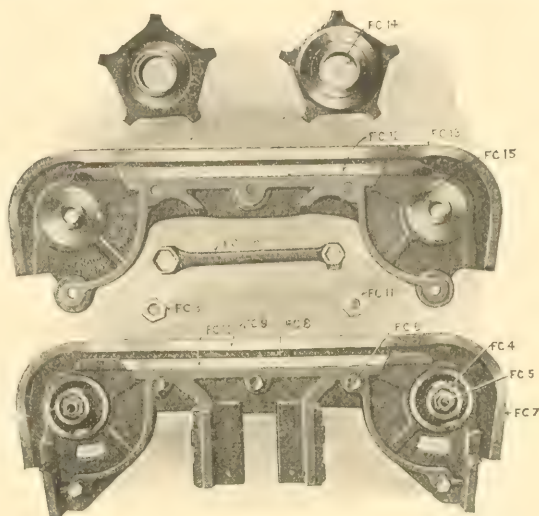
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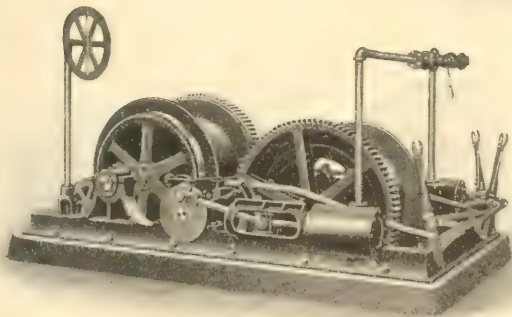
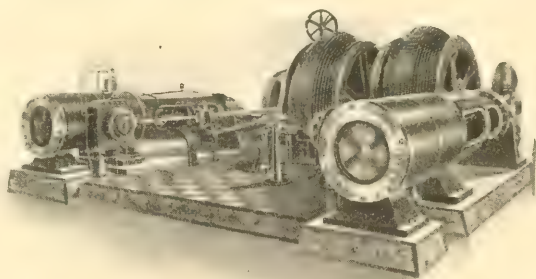
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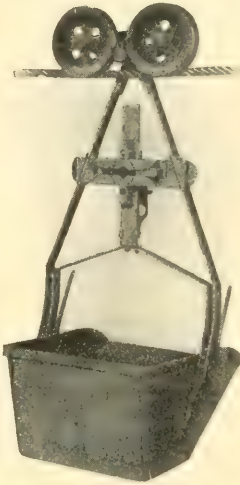
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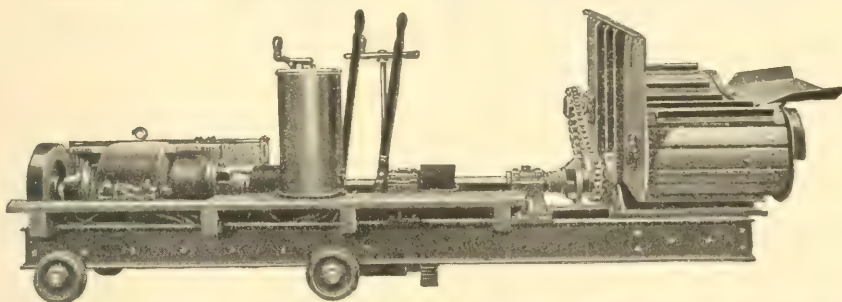
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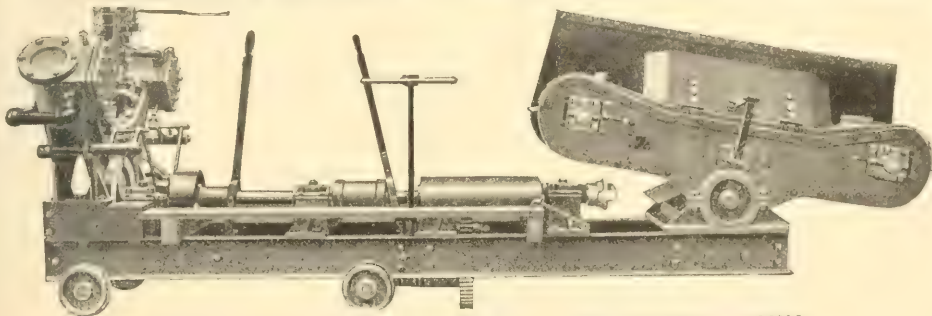
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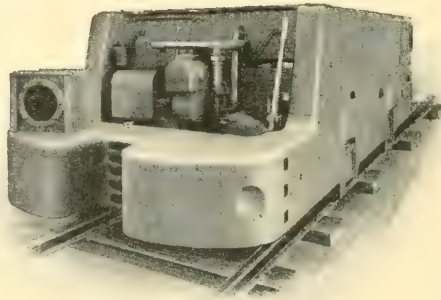
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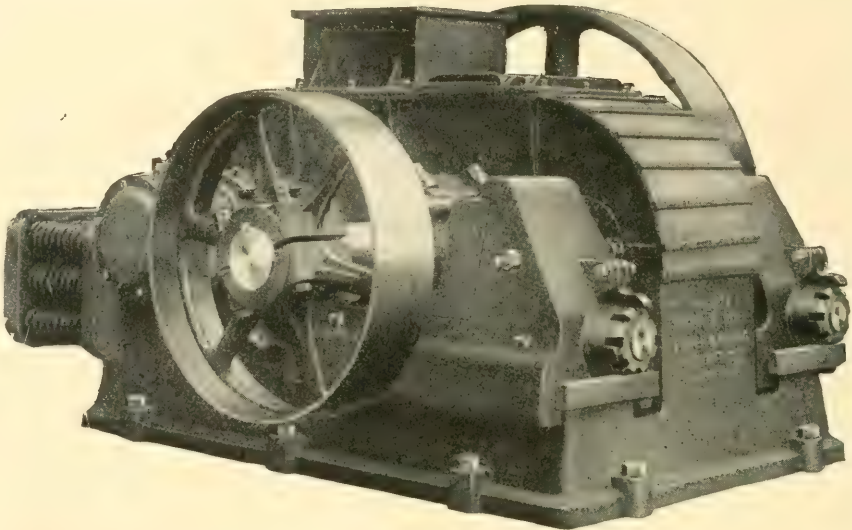
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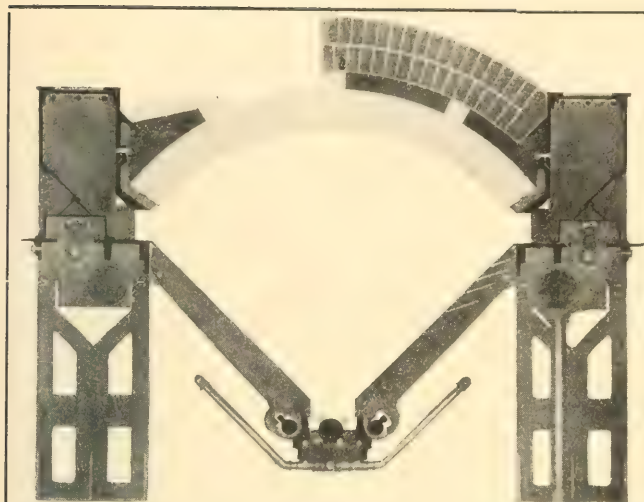
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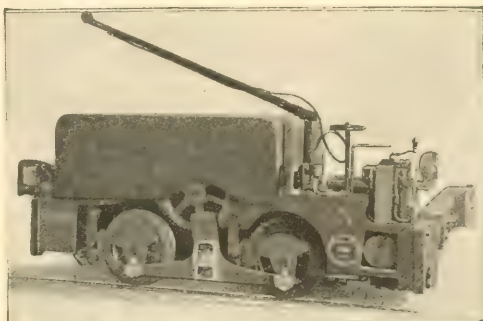
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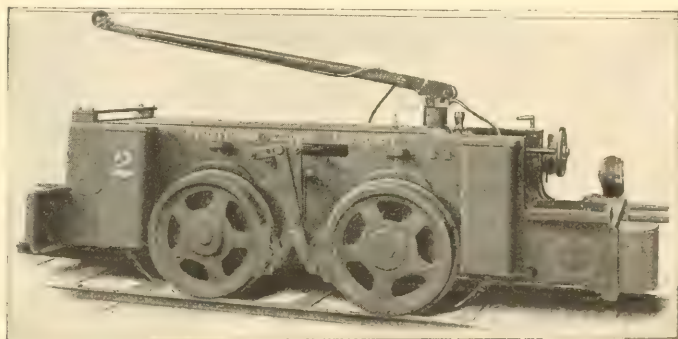
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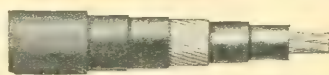
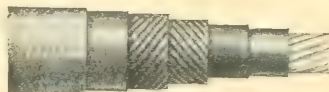
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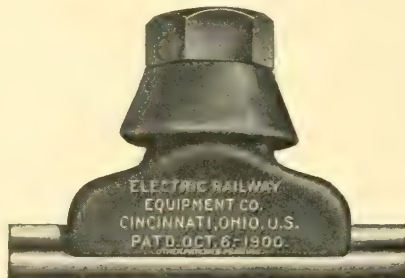
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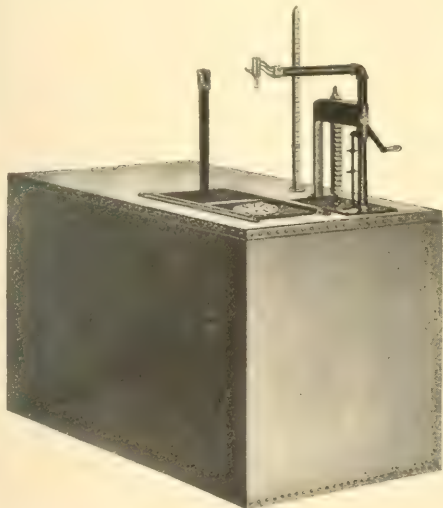
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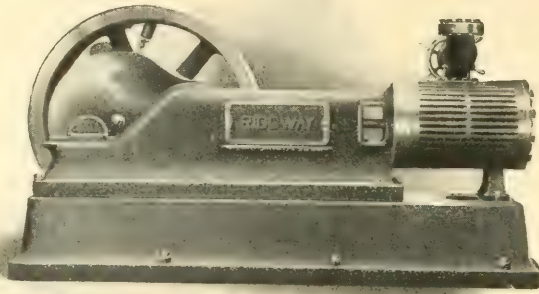
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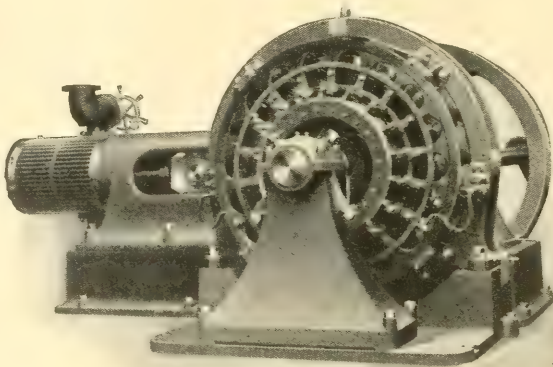
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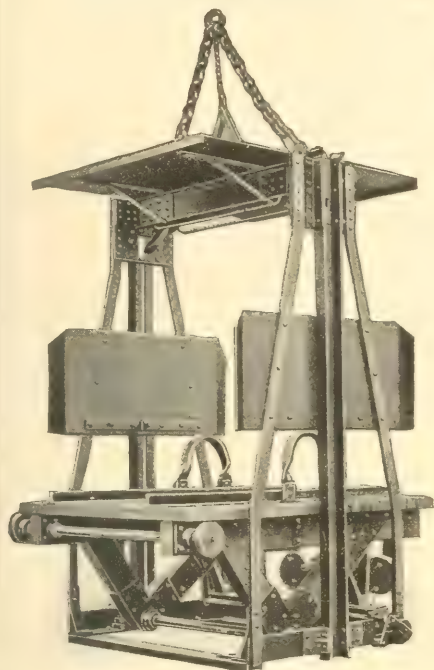
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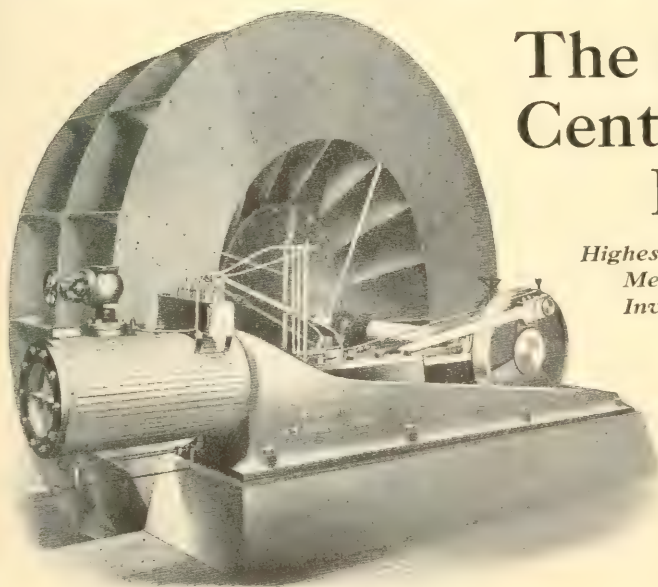


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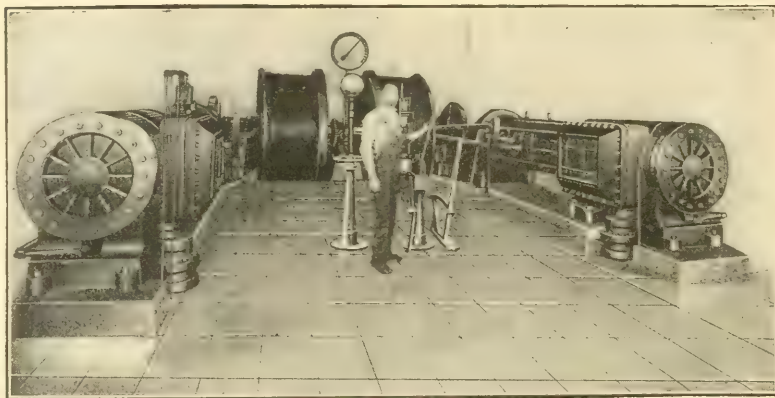
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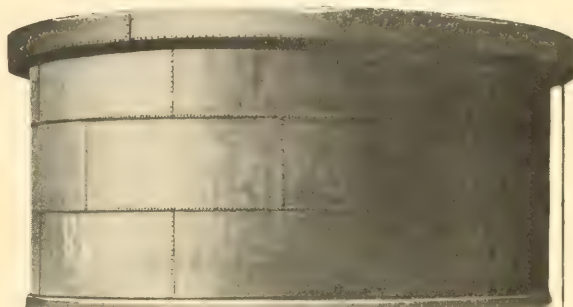
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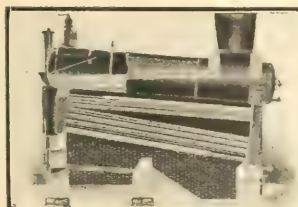
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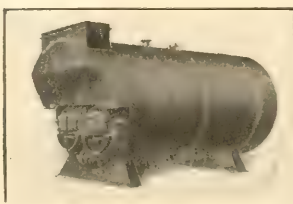


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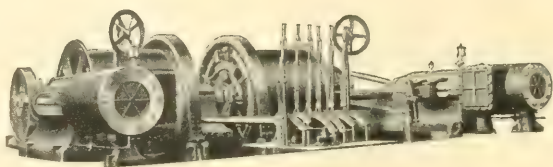
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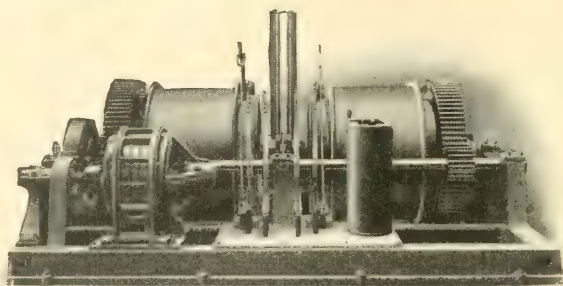
Steam and Electric

MINE HOISTS

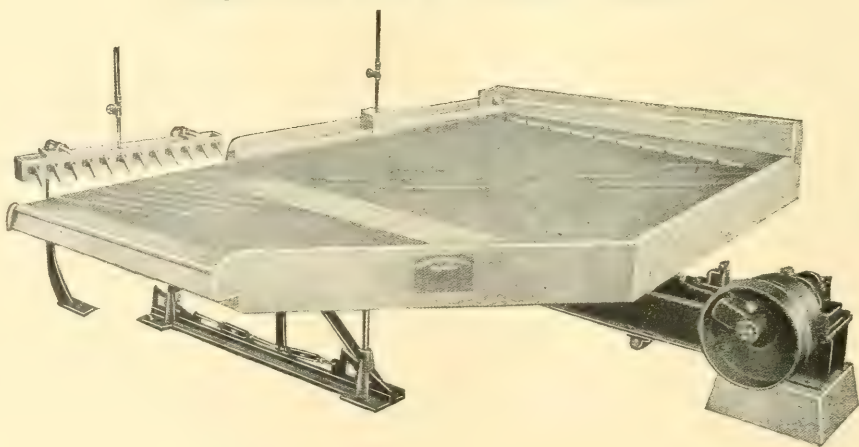
IN ALL SIZES



Write for Bulletins



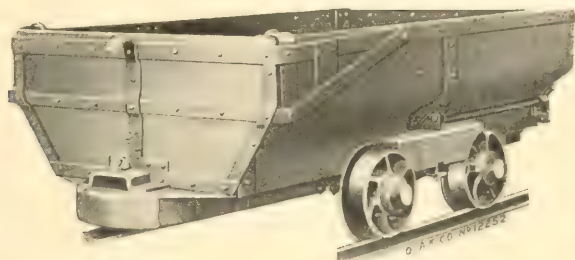
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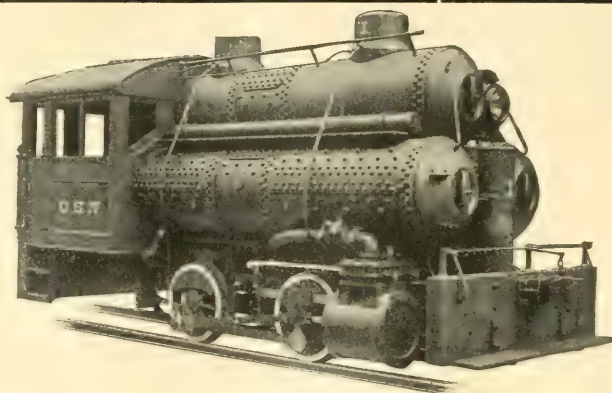


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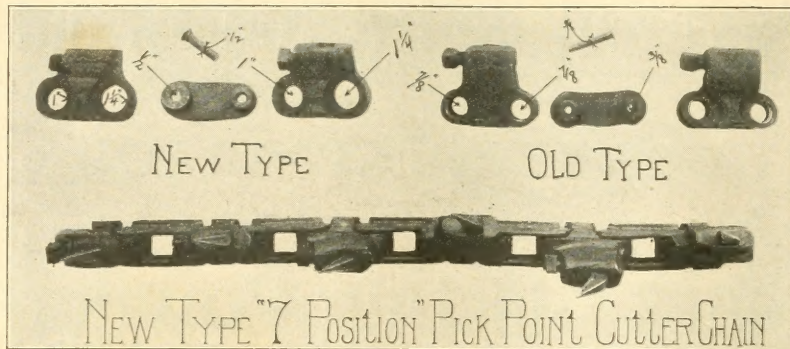
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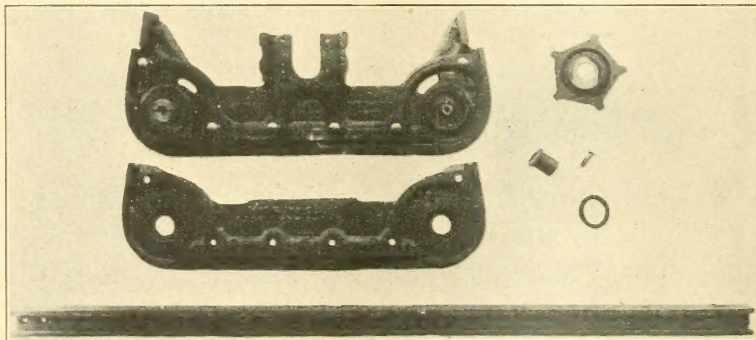
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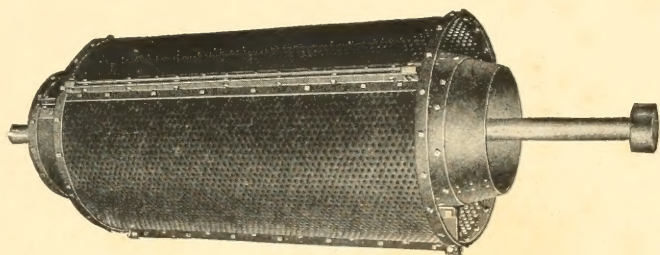
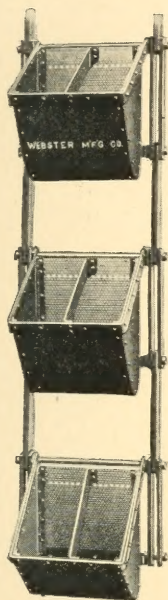
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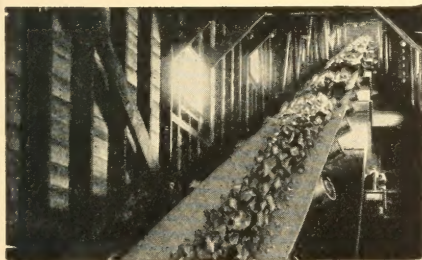
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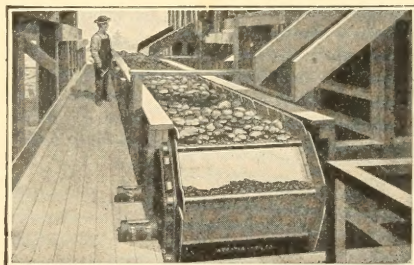


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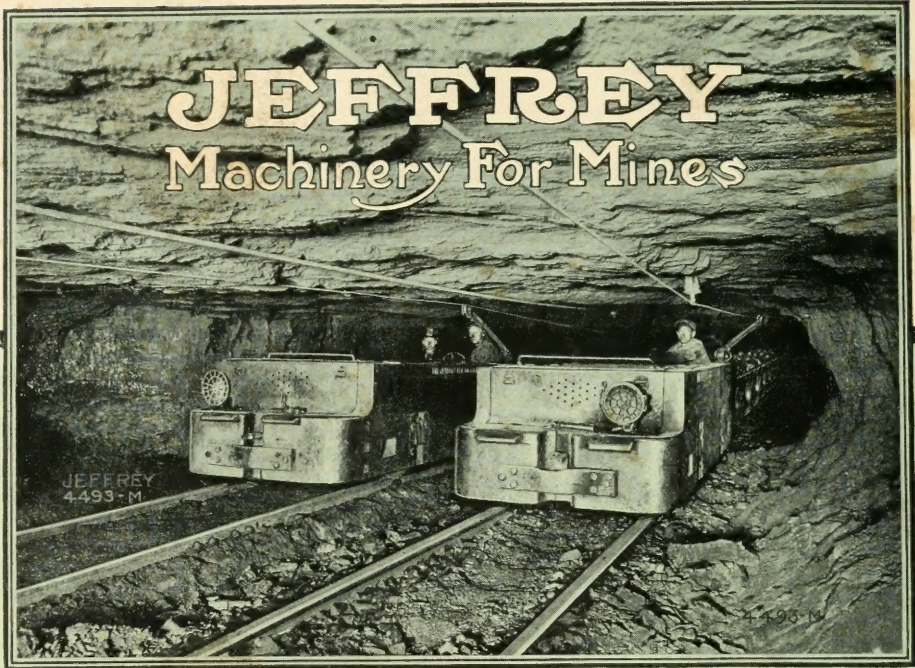
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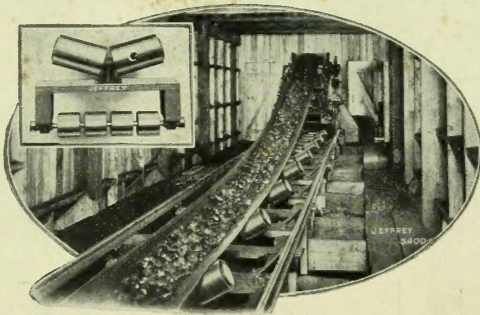
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